

ABSTRACT OF THE DISCLOSURE

In a semiconductor device producing method, a plug is formed within a contact hole formed in a barrier film and an interlayer insulating film on a semiconductor substrate. Then, an insulation film is formed on the plug and barrier film, and a hole is made in the insulation film such that an upper surface of the plug is exposed. A first conductive film is formed on the insulation film so as to fill the hole, and then etched by a CMP method to form a lower electrode within the hole. The insulation film is removed and the lower electrode is left in a protuberant manner. A dielectric film made of a ferroelectric or high-dielectric-constant substance and a second conductive film are sequentially formed over the lower electrode and the barrier film, and then patterned simultaneously to thereby form a capacitor dielectric film and an upper electrode.